

Improvement of Prospective Teachers' Reflective Skills Through Reflective Practices: A Time Series Quasi-Experimental Study

Zunaira Liaquat¹ and Musarrat Habib²

<https://doi.org/10.62345/jads.2024.13.4.93>

Abstract

This study examined the effect of teachers' reflective practices on developing the reflective skills of prospective teachers. The research investigated the teachers' approaches in applying such practices in teaching to establish whether these reflective practices are essential and to what extent they benefit the prospective teachers. This research focused on a BS-level program in a private university. The study's research design was a Quasi-experimental design that employed a time series design with an intact group (section) of prospective teachers. The intact group was formed in the study sample. The research paradigm was positivist, followed by the time series design. The data was collected through face-to-face interaction using an observation scale. The researcher added questions about reflective practices measured against a 5-point scale. The researchers used reflective practices, such as a reflective classroom environment, self-evaluation, group discussion, and positive feedback. The teacher taught the English Language-IV (Prose and Translation) Program. There were two observations in a month and eight in four months and 16 weeks. The data was analyzed using visual analysis and one-way repeated measures ANOVA. Partial eta value (.953) revealed that reflective practices significantly affect prospective teachers' reflective skills. To improve prospective teachers' reflective skills, the researchers recommended using reflective practices to teach prospective teachers for their better performance.

Keywords: Reflective Practices, Reflective Skills, Visual Analysis, One-way ANOVA.

Introduction

Reflecting on one's teaching practice is a crucial component of teacher education. Reflective practices can help students and teachers improve several skills, including thinking critically, making sound decisions, and using logical reasoning (Goodley, 2018). According to Dewey (2001), who first outlined reflection as a systematic approach to problem-solving in 1916, reflective practice was a forerunner in this field. As a result of using high-quality learning and teaching methods, teachers who practice reflective thinking consistently engage in systematic and thoughtful action through self-inquiry in their classrooms (Amjad et al., 2024, a, b, c, d; Cruickshank, 1984; Pollard, 2002; Posnanski, 2002; Tang, 2002).

Kirkman and Brownhill (2020) state that a self-reflective educator breathes fresh life into the classroom by making it an engaging, interesting, and motivating place for everyone involved. Reflective teaching practice is an effective strategy for advanced educators to evaluate their professional growth as educators by drawing on their own unique perspectives and life

¹PhD Scholar, Department of Education, The University of Lahore, Lahore, Pakistan.

Email: zunaira.liaquat66@gmail.com

²Assistant Professor, Department of Education, The University of Lahore, Lahore, Pakistan.

Email: musarrat.javaidd@ed.uol.edu.pk



experiences. They take stock of who they are as educators, assess how they approach the classroom and remain receptive to feedback from colleagues. A prominent educator of the 20th century, John Dewey (1933), distinguished between "daily" activities dictated by authority, habit, or practice and "reflective" actions, which involve a readiness to engage in continuous self-evaluation and professional growth (Farahian et al., 2021).

The main objective of any "Teacher Education Programme" is to recognize and address the discrepancies between theory and practice. Historically, it was believed that aspiring teachers were required to possess the skill to structure and present lessons, which was seen as an essential competency. Nevertheless, in the modern era, educational endeavors have become more refined, polished, purpose-driven, and competitive compared to their previous state. Various disciplines necessitate the application of distinct instructional approaches in the present circumstances. The responsibilities of teachers have become increasingly intricate as they are required to employ diverse pedagogical approaches, maintain a conducive classroom atmosphere, expand and apply evaluation techniques, integrate technology into instruction, and captivate students' focus (Khanam, 2015; Ong et al., 2024). This study investigates the impact of reflective practices on future teachers' development of reflective abilities. It aims to create an atmosphere that promotes transformational learning experiences throughout their initial teacher training courses. According to Gün (2011), systematic practice of reflection can enhance its effectiveness. This paper explores the use of reflective practices to improve the development of reflective skills, focusing on examining the efficacy of including various reflective practices in training. The central inquiry revolves around whether incorporating diverse reflective approaches enhances the effectiveness of reflection in cultivating strong reflective skills.

Objectives of the study

1. To investigate the effect of teachers' reflective practices on critical thinking skills of the prospective teachers.

Hypotheses of the Study

Ho1: There is no significant effect of teachers' reflective practices on critical thinking skills of the prospective teachers.

Literature Review

John Dewey is largely acknowledged as the founder of the notion of reflection (1933). Hatton and Smith (1995) said that Dewey drew upon the ideas of other previous educators, including Plato, Aristotle, Confucius, Lao Tzu, Solomon, and Buddha, as referenced in Houston's (2002) research. According to Dewey, reflection involves actively, consistently, and deliberately assessing the underlying assumptions that support any concept or behaviour, considering the future outcomes it may lead to (Grant & Zeichner, 1984). "Valli (1997) asserts that Dewey's language, which strongly supports the importance of reflection, is so powerful that it raises doubts about the possibility of basing teacher education on any other approach." Dewey argues that engaging in reflective thinking serves as a safeguard against the mindless tendency to unquestioningly accept the status quo. Dewey states that routine behaviour, as contrast to reflective action, is guided by variables such as tradition, habit, authority, and institutional definitions and expectations. On the other hand, engaging in reflective action requires a commitment to continuously assess oneself and strive for personal growth, as mentioned in the work of Pollard and Tann (1987).

The terms "reflective practice," "reflection-in-action," "reflection-on-action," "reflection-for-action," "knowing-in-action," and "technical rationality" have become commonplace in the contemporary discourse on reflection mostly due to their initial introduction by Schön (1983, 1987). Notably, his concept of reflection-in-action is of utmost importance. This refers to the rapid and automatic thought process that occurs when a skilled educator effortlessly resolves an issue or dilemma, without conscious effort (Harrison, 2008). Following an event, such as a classroom session, a deliberate and mindful process known as reflection-on-action may occur. "Reflection-for-action" in the context of instruction refers to the process of dedicating time to deliberate thought and proactive preparing beforehand. The term "knowing-in-action" refers to the inherent or implicit comprehension that expert's exhibit due to extensive practical expertise in their field. When Schön mentions "technical rationality," he means using empirically validated propositional knowledge in teaching methods. One example is the impact of propositional information, such as theories of learning and personality development, on teaching students with different personality traits and socioeconomic backgrounds.

Both pre-service and in-service teachers participate in reflective practice. The most commonly seen reflecting strategies at the pre-service level are coaching and peer engagement. In her 1993 study, Ojanen investigates the role of a teacher educator as a coach in facilitating the development of reflective teaching skills in student teachers throughout their field experiences. Teacher educators may effectively support student teachers in reflective practice by promoting discussions on students' experiences in both small and large groups, and by utilising students' personal histories and dialogue diaries. Kettle and Sellars (1996) conducted an analysis of the development of teacher trainees in their third year. The students' reflective papers were evaluated, and comprehensive interviews were undertaken to get further insight into the students' reflective practices. Through the implementation of peer reflective groups, it was found that a collaborative approach to professional development could be shown, benefiting students in their own classrooms and throughout their careers as educators. Multiple studies have demonstrated that engaging in critical self-reflection is an effective approach for fostering professional development. Freidus (1997) presents a case study that explores the challenges faced by an educator and graduate student as she confronts her own beliefs about effective teaching. Initially, she employed a teaching approach focused on explicit instruction. The challenges to her preconceived beliefs of successful teaching contradicted the teachings of her conventional teacher preparation curriculum. Her utilisation of a reflective teaching approach in her classroom enabled her to identify and validate her own learning. Early emphasis is placed on the capacity to ruminate on one's own teaching practices during the teacher-in-training programme. There is a consensus among scientists that this approach possesses the capacity to enhance educator development and enrich classroom experiences. Jacobs et al. (2011) state that reflective teaching affords instructors the opportunity to reevaluate their methodology and acquire a deeper understanding of the results of their lessons. Further, they stated that reflective teaching assists instructors in honing their approaches to establishing rapport with pupils so as to more effectively foster their growth and learning. Akbari (2007) suggests that through reflective practice, educators can enhance their teaching by reassessing their own assumptions as well as the assumptions of their mentors. Educators will employ knowledge acquired from their coursework and practical experience to resolve challenges and render judicious judgments within the classroom environment.

Research has demonstrated that engaging in reflective teaching is essential for the professional development of educators (Akbari 2007; Amin et al., 2024; Griffiths 2000; Jacobs, 2011; Killen 2007; Malik et al., 2024). Very little research has been undertaken about the introspection of

student instructors during clinical encounters. Griffiths (2000) argues that when it comes to introspection, it is taken for granted rather than given significant emphasis. It is commonly assumed that pre-service instructors will actively participate in self-reflection. This study contributes to the current discourse regarding the significance of self-reflection in the professional growth of pre-service teachers. Additionally, it aims to provide recommendations that might assist pre-service teachers in becoming introspective educators.

An essential aspect of every "Teacher Education Programme" is the thorough analysis of the disparities between theory and practice. For ages, the planning and delivery of lessons have been seen as essential requirements for instructors. However, contemporary classroom activities have become more advanced, focused on achieving specified objectives, and characterised by a healthy sense of rivalry. Instructional approaches differ across different subjects. Therefore, the role of a teacher has broadened to include a more extensive set of duties, such as employing diverse instructional methods, maintaining the classroom atmosphere, developing and managing assessment tools, utilising technology, and fostering students' engagement (Khanam, 2015). Reflective educators have the ability to consistently evaluate and adapt their approaches in order to effectively cater to their pupils. They have the ability to facilitate effective learning for pupils with diverse learning styles (Habib et al., 2024, a; Park & Oliver, 2008). Akbari (2008) defines reflective practice as the deliberate process of retrospectively examining and evaluating one's own cognitive patterns and actions. This concept is a relatively recent development within the realm of teacher education, gradually supplanting traditional beliefs regarding optimal methods for educating prospective educators.

According to a study performed by Azeem (2011) in Pakistan, it was found that novice teachers at most teacher education colleges do not receive sufficient preparation for their initial classroom experience. The majority of educators had a deficiency in their understanding of reflective teaching approaches and were unaware of how to assess their own teaching practices before to, during, and subsequent to a session. A number of institutions around the country fail to include the subject of "reflective practice," as advised by HEC for teacher education programmes. A comprehensive reflective teachers' training programme is necessary to consistently and effectively align objectives and outcomes. This programme should educate aspiring educators on the latest teaching standards and methods for evaluating their own performance against national and international benchmarks. It is imperative that the objectives of equity and justice within the educational setting be unambiguous, that prospective educators possess the capacity to identify and address any deficiencies in their attainment. To excel as an educator, it is important to engage in introspection on one's own personal experiences and effectively incorporate those insights into one's teaching. According to Zeicher and Liston (2013), educators who are competent in their reflective practice must possess the ability to receive feedback while also upholding their own values and viewpoint on teaching methodologies.

Methodology

Following the positivistic worldview, the researchers used a quantitative approach to investigate the phenomenon under study. In the current a quasi-experimental design that employed a time series design to find out the effect of teachers' reflective practices on reflective skills of the prospective teachers. The time series design involves repeated observations during a planned intervention to study the change process comprehensively. It tracks changes in experimental variables throughout the program, making it valuable for long-term interventions. Reactivity issues are addressed by integrating measuring procedures into the setting. When a control group isn't

feasible, time series serves as a quasi-experimental design. It's particularly useful when there are no control groups or when dependent observations are collected over time, such as in field studies or when dealing with single cases.

Participants

The population of the present study were the prospective teachers of B. Ed (Hons) Elementary of a private sector university in the district of Lahore. Using the intact group, the total enrollment of the B. Ed (Hons.) Elementary was 23.

Intervention

In this quasi-experimental design research, the subjects were taught with the help of reflective practices for 16 weeks. The researcher used reflective practices like a learner-centered classroom, a reflective classroom environment, valuing criticism, self-evaluation, decision-making, problem-solving, group discussion, and positive feedback. The teacher taught the English Language-IV (Prose and Translation) Program, and the teacher used only three reflective teaching practices at a time. During the intervention period, the researcher assessed prospective teachers through observation for changes in their reflective skills. Every two weeks, observation was conducted, and a total of 8 observations were assessed throughout the intervention.

Instrument Development and Data Collection

The researcher developed a 5-point observation scale to measure reflective skills. The researcher developed the observation scale according to reflective practices. The researcher added questions about reflective practices measured against a 5-point scale, i.e., 5-Always, 4-Mostly, 3-Sometimes, 2-Rarely, and 1-Never, to measure reflective skills. There were two observations in a month and eight in four months and 16 weeks. In this time series quasi-experimental research, the researcher observed the effect of teachers' reflective practices on the reflective skills of prospective teachers. The subjects were taught with the help of reflective practices for 16 weeks. The researcher used reflective practices like a learner-centered classroom, a reflective classroom environment, valuing criticism, self-evaluation, decision-making, problem-solving, group discussion, and positive feedback. The teacher taught the English Language-IV (Prose and Translation) Program, and the teacher used only three reflective teaching practices at a time. During the intervention, the researcher collected the data on an observation scale to measure reflective skills in the post-test.

Results and Discussion

The researchers used SPSS (Version 26) for the data analysis process. After testing the assumptions of observation scale (means and standard deviation), the researchers analysed it using visual analysis. One-way repeated measure ANOVA was also deployed to measure the mean difference within the subjects. The results are presented below in the form of figures and tables.

Analyzing Reflective Skills of Prospective Teachers

The researcher took eight measurements using observation scale. Visual analysis was carried out to measure the intensity of Reflective skills developed in prospective teachers.

The researcher deployed the one-way repeated measure ANOVA at the significance level of .01. By following the criteria discussed earlier, the assumption of sphericity was tested. The null hypothesis evaluated was:

H₀1: There is no significant effect of teachers' reflective practices on reflective skills of the prospective teachers.

The results are as follows:

Table 1: Mauchly's Test of Sphericity for Reflective Skills

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Reflective Skills	0.00	242.365	27	0.000	0.226	0.240	0.143

In the table 1, it is indicated the results of Mauchly's test of Sphericity and found that Mauchly' $W = 0.00$ and significance value is less than 0.01 i.e. 0.000. It shows that Mauchly's tests statistics is significant. Thus, it can be said that assumption of sphericity is violated. Therefore, there found a significant difference in the results of experimental conditions.

Since the Greenhouse-Geisser values, indicated as less than 0.75, specifically 0.226, further indicate a violation of the assumption, additional analysis utilizing the Greenhouse-Geisser correction is warranted. This correction method is employed to adjust the degrees of freedom in the analysis of variance (ANOVA) when sphericity assumption is violated, ensuring more accurate inference about the significance of the effects. Therefore, by employing the Greenhouse-Geisser test, a more robust understanding of the experimental outcomes can be obtained, considering the impact of the violation of sphericity assumption on the statistical analysis as follows:

Table 2: Mean and Standard Deviation Values and Test of within subject effects

Variable	<i>M</i>	<i>SD</i>	<i>N</i>	<i>Df</i>	Sphericity Assumed	Effect	<i>F-Ratio</i>	<i>Sig.</i>	Partial Eta Squared
Week 1	12.04	1.942	23	1.57	4227.543	Reflective Skills	449.39	0.000	0.953
Week 2	14.39	1.305							
Week 3	18.09	0.949							
Week 4	20.91	0.848							
Week 5	23.35	0.647							
Week 6	23.91	0.596							
Week 7	24.91	1.411							
Week 8	25.96	1.364							

The table above revealed that how reflective practices activities influences reflective skills of the prospective teachers. It further shows that after Greenhouse Geisser correction, sphericity adjustment reveals $F(1.57) = 449.39$, $p = 0.00 < 0.01$, $np^2 = 0.95$. Therefore, the value of partial eta squared is more than 0.14, which indicated that reflective practices activities had a significant effect on prospective teachers' reflective skills over the period of time.

Results

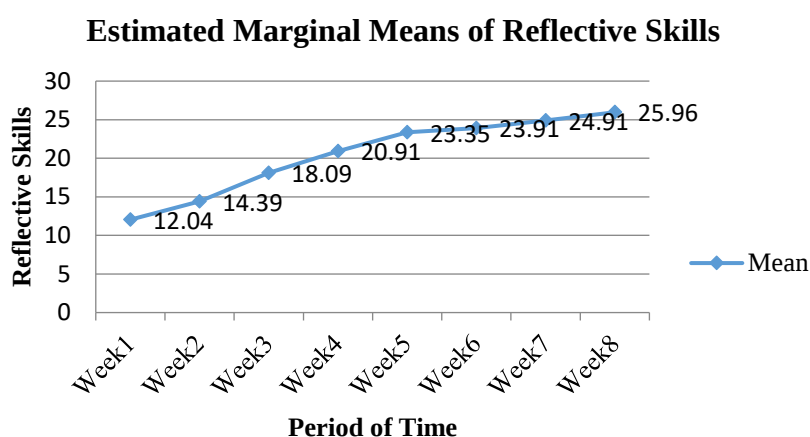
Looking into the partial Eta Squared value and considering the criteria outlined by Wei et al. (2009) and Cohen (1988), it becomes evident that the value np^2 of 0.95 falls within the category denoting a substantial effect. This implies that the treatment, comprising reflective practices activities, has

exerted a significant and influential impact on the reflective skills of prospective teachers. This effect is particularly noteworthy given the duration of the study, spanning 16 weeks and encompassing eight separate measurements. The robustness of this effect underscores the efficacy and potency of the intervention in fostering the development of reflective skills among the participants. Thus, these findings not only validate the effectiveness of the treatment but also highlight its profound influence on the targeted outcome over an extended period, lending further acceptance to its pedagogical value and practical applicability in educational contexts.

Estimated Marginal Mean Scores for Prospective Teachers' Reflective Skills

The results for the estimated marginal mean scores of prospective teachers' reflective skills during the 16-week study are presented below:

Figure 1: Mean values of Reflective Skills over the period of time



In the figure 1 the researcher represented the use of reflective skills in prospective teachers during the time series quasi-experimental study. At the start of the experiment the prospective teachers' reflective skills ($M_1 = 12.04$) were lesser than the last day of the measurement ($M_8 = 25.96$). It can be seen that the mean values of the measurements of the group gradually increases with the increase of time ($M_1 = 12.04$, $M_2 = 14.93$, $M_3 = 18.09$, $M_4 = 20.91$, $M_5 = 23.35$, $M_6 = 23.91$, $M_7 = 24.91$, $M_8 = 25.96$). Thus, the trend shows a significance development of reflective skills prospective teachers over the period of time.

Discussion

The primary purpose of this research was to explore the effect of reflective practices on reflective skills. The study examined whether there was the effect of partial eta squared (np^2) evaluated between the reflective practices of teachers and reflective skills of prospective teachers. The current study results which were derived from observation, demonstrated that reflective practices in general appear to have a high effect on the development of reflective skills among individuals who are prospective teachers. The current study also supported the findings of Zahid and Khanam (2019) was to determine the impact of reflective teaching practices on the teaching performance of prospective teachers. The results demonstrated a significant difference in the reflective skills performance between trained and untrained teachers following the training. Contrary to

expectations, the experimental group, while working in the field, did not demonstrate better application of the taught skills in their classroom compared to the control group.

The researchers developed activities based on the reflective practices during the intervention phase. It also included learner-centered classroom, a reflective classroom environment, valuing criticism, self-evaluation, decision-making, problem-solving, group discussion, and positive feedback, which had a significant effect on their development of reflective skills, as supported by the argumentation of the study conducted by Wahba (2019) investigates the perspectives of educators about their reflective practices inside private institutions of higher education. The objective of this study is to gain insight into the potential influence of instructors' perspectives on their instructional practices on the evolution of their pedagogical approaches. This study aims to explore the perspectives of educators on their reflective practices and analyse their strategies for implementing these activities in their instructional practices. The objective is to determine the significance of reflective practices and the extent to which they contribute to the professional development of teachers. The primary objective of this study is to examine the English departments operating within private universities, specifically The American University in Cairo (AUC) and Misr International University (MIU). This study employed a qualitative methodology. A total of ten faculty members willingly took part in an individual interview. The findings suggest that instructors from both AUC and MIU demonstrated an understanding of the importance of reflection, as it has been seen to have a favourable influence on their teaching practices. Furthermore, the act of engaging in self-reflection on one's activities seems to be both feasible and perceived as beneficial by the individual participants. Moreover, they placed significant importance on receiving input from both students and peers. In addition, instructors engaged in self-reflection to ensure they were doing their duties effectively and addressing the needs of their pupils. There was evidence suggesting a desire to boost their own performance with the aim of improving and enriching students' learning experiences. The data and literature gathered in this research have shown that it is beneficial to strengthen and integrate reflective practices into teaching, since they have a beneficial effect on teacher instruction. Potential avenues for future study might encompass the examination of strategies aimed at augmenting teachers' reflective practices, as well as the methods by which reflective practitioners can be nurtured.

The current study also supported the findings of Galvez-Martin (2003) conducted a comparison of the level of reflections between in-service and pre-service instructors. The data analysis revealed that in-service teachers exhibited greater levels of reflection compared to pre-service teachers, despite the absence of any formal training on reflective thinking. Galvez-Martin highlighted that class teachers possess greater expertise, potentially leading to this deduction. According to Semerci and Kılınç's (2010) research, as the seniority year of teachers' increases, they are more inclined towards reflective thinking. This includes characteristics such as continuous and intentional thinking, being open-minded, asking questions, and effective teaching. They also become more investigative, proactive, and sincere in their approach. Several studies have identified a flexible learning environment as a contributing factor to students' reflective thinking (Kim et al., 2004; Koszalka et al., 2002). According to Korthagen and Vasolos (2005), in-service teachers should inquire about their students' desires, thoughts, and emotions during the process of reflection. The present study has supported the notion of this previous research that reflective practices develop the reflective skills of prospective teachers.

The current research confirms the findings of Klempin and Rehfeldt (2020). This research was done in the context of the development of reflective skills in teacher trainees, and it has a more experimental form. In this study, a Teaching and Learning Lab Seminar was guided with a quasi-

experimental approach, control groups, and different types of interventions. It identified significant improvements concerning reflective depth. The effect sizes are medium or high across all the TLLS groups. The highest reflective depth related to strategic knowledge and teaching English as an additional language. This study found that reflective depth was also influenced due to certain interventions which rejected the null hypothesis.

The current study results echo the conclusions drawn by Aslam et al. (2021) study focused on pre-service teachers in Pakistan; it was found that the majority of teacher education programs do a poor job of preparing reflective practitioners. Qualitative and quantitative data sources were used to demonstrate that the programs in question have narrow-based training that does not promote reflective skills. The Reflective Thinking Questionnaire was validated, revealing relatively stable mean values across the variables, as well as strong correlations between reflective constructs. By using Structural equation modelling (SEM), the authors were able to test the desirability of RTQ as a measure of reflective thinking. The results suggested that the teacher education programs in Pakistan must adjust their current practices to improve the attention paid to reflective skills.

Conclusion

Enhancing reflective practices is essential for promoting progress in the field of education. Multiple studies have repeatedly demonstrated that instructors who actively engage in talks, reflections, and self-reflection are enhancing their teaching methods and cultivating a sense of their own efficacy. The current body of research on this subject provides compelling evidence that incorporating reflective practices into teaching has several benefits for both educators and learners. Clearly, teacher education programs should make improvement in academic performance of teachers a priority as these skills are prerequisites to effective teaching. Teachers in training may be taught to be able to consistently measure their effectiveness as educators and adjust accordingly to meet the diverse needs of their learners. With guided self-assessment, prospective teachers can reflect on their lesson personally after each lesson. Questions encourage consideration of areas of strength, of weakness, and of strategies to energize students, and to enhance understanding. Classroom mastery begins with deeper introspection. When reflected on together with colleagues, reflective practices foster better teaching. Prospective teachers observe and critique each other's lectures, and then engage in constructive dialogue around alternative approaches. They reflect on lessons in shared journals, gaining new perspectives to help improve their style of teaching. Teachers explore new ways to better help students through constructive feedback and assessment. Participants in this present research stressed the significance of reflecting abilities in shaping teaching reflective practices. The participants collectively had experiences that emphasized the impact of engaging in reflective practices activities on their efficacy as instructors. The results of the study suggest that aspiring educators demonstrated a notable level of engagement in utilizing reflective skills within their instructional reflective practices. Nevertheless, it is necessary to emphasize that although the participants demonstrated a certain degree of proficiency in reflective practices and abilities, it is imperative to include these skills into the educational process.

The study's significant finding pertains to the widespread use of reflective skills shown by aspiring prospective teachers. Their remarks ranged from promoting learner-centered classrooms to establishing reflective classroom environments, which achieved through the use of reflective practices. Furthermore, the participants had a proclivity for emphasizing the significance of constructive criticism and actively participating in positive feedback, so demonstrating their commitment to continuous growth through self-reflective approaches.

The findings of this investigation have broad and definitive implications. It is clear that fostering a culture of reflective thinking among prospective teachers is essential to raising standards of instruction and boosting effectiveness. Teachers need to be flexible and creative in their approach to tackling a variety of issues since the educational profession is dynamic and new challenges arise often. It becomes clear that it is practically necessary to include reflective thinking into organizational structures and teacher preparation programs. The inclusion of reflective thinking into teacher training programmes has the capacity to foster a community of practice in which aspiring prospective teachers engage in reflective discussions and collaboratively strive to attain teaching excellence. Such cooperative efforts not only promote the professional development of aspiring prospective teachers but also foster a culture of continuous learning and growth inside educational institutions. When prospective teachers include reflective practices activities into their practicum experiences, they are given the opportunity to apply theoretical ideas in real contexts, resulting in a deeper understanding and enhancement of their reflective skills. It is the duty of educational institutions, policymakers, and stakeholders to prioritise the incorporation of reflective thinking skills into teacher training initiatives and to provide educators with the essential support and resources to actively engage in reflective practices.

Recommendations

- A longitudinal study might be conducted to examine the effects of reflective practices on the development of reflective thinking skills. Longitudinal research is used to monitor the reflective thinking skills of participants in order to get a deeper understanding of the long-term usefulness of reflective practices in enhancing the quality of learning.
- Qualitative or mixed-method research approaches can be used to examine associated characteristics, such as critical thinking abilities, that affect the effectiveness of reflective practices in teacher education. By conducting in-depth interviews or focus groups with prospective teachers and other stakeholders, researchers can get useful insights into associated variables such as critical thinking abilities that either facilitate or hinder the development of reflective thinking skills.
- The integration of technology in the enhancement of reflective practices has significant value. Further investigation should be conducted to study the possibility of technology-enhanced reflective practices, such as reflective journaling, peer feedback, video analysis, or online platforms, for aspiring prospective teachers in the field of teacher education. These reflective practices, which are strengthened by technology, improve the process of reflective learning and encourage collaboration.

References

- Akbari, R. (2007). Reflections on reflection: A critical appraisal of reflective practices in L2 teacher education. *System*, 35(2), 192-207. <https://doi.org/10.1016/j.system.2006.12.008>
- Amin, M., Davis, C. J., Amjad, A. I., Parveen, S., & Naqvi, S. A. A. (2024). Identifying Acoustic Variability Patterns in Spoken English of Fricative Consonants Among Pakistani Native Punjabi Speakers. *Journal of Asian Development Studies*, 13(3), 1036-1046. <https://doi.org/10.62345/jads.2024.13.3.84>
- Amjad, A. I., & Aslam, S., & Sial, Z. A. (2024a). Beyond Borders: Examining Bullying, Social Networks, and Adolescent Mental Health in Developing Regions. In *Frontiers in Education*, 9, p. 1431606. <https://doi.org/10.3389/feduc.2024.1431606>

- Amjad, A. I., Aslam, S., & Hamedani, S. S. (2024c). Exploring Structural Injustices in School Education: A Study on Intergenerational Repair. In *Frontiers in Education*, 9, p. 1395069). *Frontiers*. <https://doi.org/10.3389/feduc.2024.1395069>
- Amjad, A. I., Aslam, S., & Tabassum, U. (2024d). Tech-infused classrooms: A comprehensive study on the interplay of mobile learning, ChatGPT and social media in academic attainment. *European Journal of Education*, e12625. <https://doi.org/10.1111/EJED.12625>
- Amjad, A. I., Aslam, S., Saleem, Z., Habib, M., Tabassum, U., Ashfaq, S., & Siraj, D. (2024). Unlocking Success: Measuring Higher Education Students' Performance Through E-Books and M-Learning. *Environment and Social Psychology*, 9(11), 3148. <https://doi.org/10.59429/esp.v9i11.3148>
- Amjad, A. I., Aslam, S., Tabassum, U., Sial, Z. A., & Shafqat, F. (2024b). Digital Equity and Accessibility in Higher Education: Reaching the Unreached. *European Journal of Education*, e12795. <https://doi.org/10.1111/EJED.12795>
- Aslam, R., & Khan, N. (2021). Secondary school teachers' knowledge and practices about constructive feedback: Evidence from Karachi, Pakistan. *Cakrawala Pendidikan*, 40(2), 532-543. <https://doi.org/10.21831/cp.v40i2.35190>
- Azeem, M. (2011). Problems of prospective teachers during teaching practice. *Academic Research International*, 1(2), 308.
- Cruickshank, D. (1985). (1985a). Models for the preparation of America" s teachers. Bloomington, IN: Phi Delta Kappa Educational Foundation.
- Dewey, J. (1933). How we think: A restatement of the relation of reflective thinking to the educative process. DC Heath.
- Dewey, J. (2001). *The school and society & the child and the curriculum*, 1. Courier Corporation.
- Farahian, M., Avarzamani, F., & Rajabi, Y. (2021). Reflective thinking in an efl writing course: To what level do portfolios improve reflection in writing? *Thinking Skills and Creativity*, 39, 100759. <https://doi.org/10.1016/j.tsc.2020.100759>
- Galvez-Martin, M. (2003). Reflective teaching, reflective practice, and what else. *Florida Association of Teacher Educators Journal*, 1(3), 59-65.
- Goodley, C. (2018). Reflecting on being an effective teacher in an age of measurement. *Reflective Practice*, 19(2), 167-178. <https://doi.org/10.1080/14623943.2018.1437401>
- Grant, C.; Zeichner, K. (1984). On becoming a reflective teacher. In: GRANT, C. (Ed.). Preparing for reflective teaching. Boston: Allyn & Bacon.
- Griffiths, V. (2000). The reflective dimension in teacher education. *International Journal of Educational Research*, 33(5), 539-555. [https://doi.org/10.1016/S0883-0355\(00\)00033-1](https://doi.org/10.1016/S0883-0355(00)00033-1)
- Gün, B. (2011). Quality self-reflection through reflection training. *ELT journal*, 65(2), 126-135. <https://doi.org/10.1093/elt/ccq040>
- Habib, M., Amjad, A.I., Aslam, S., Saleem, Z., & Saleem, A. (2024). Navigating Math Minds: Unveiling the Impact of Metacognitive Strategies on 8th Grade Problem-Solvers Abilities. *International Electronic Journal of Elementary Education*, 17(1), 135–144. Retrieved from <https://www.iejee.com/index.php/IEJEE/article/view/2213>
- Habib, M., Qamar, M. R., Amjad, A. I., Amin, M., Tabassum, U., Hayyat, U., & Rafique, U. (2024a). Digital Communication in School Leadership: Examining Email and WhatsApp Use, Challenges, and Efficiency in Punjab Province. *Journal of Social Sciences Advancement*, 5(4), 09–18. <https://doi.org/10.52223/JSSA24-050402-98>
- Harrison, J. (2008). Professional development and the reflective practitioner. *Reflective teaching and learning: A guide to professional issues for beginning secondary teachers*, 7-44.
- Hatton, N., & Smith, D. (1995). Reflection in teacher education: Towards definition and implementation. *Teaching and Teacher Education*, 11(1), 33-49. [https://doi.org/10.1016/0742-051X\(94\)00012-U](https://doi.org/10.1016/0742-051X(94)00012-U)

- Houston, S. (2002). Reflecting on habitus, field and capital: Towards a culturally sensitive social work. *Journal of Social work*, 2(2), 149-167. <https://doi.org/10.1177/146801730200200203>
- Jacobs, M., Vakalisa, N. C. G., & Gawe, N. (2011). *Teaching-learning dynamics*. Pearson Education South Africa.
- Jay, J. K., & Johnson, K. L. (2002). Capturing complexity: A typology of reflective practice for teacher education. *Teaching and Teacher Education*, 18(1), 73-85. [https://doi.org/10.1016/S0742-051X\(01\)00051-8](https://doi.org/10.1016/S0742-051X(01)00051-8)
- Kettle, B., & Sellars, N. (1996). The development of student teachers' practical theory of teaching. *Teaching and Teacher Education*, 12(1), 1-24. [https://doi.org/10.1016/0742-051X\(95\)00016-D](https://doi.org/10.1016/0742-051X(95)00016-D)
- Khanam, A. (2015). A practicum solution through reflection: An iterative approach. *Reflective practice*, 16(5), 688-699. <https://doi.org/10.1080/14623943.2015.1071248>
- Killen, R. (2007). *Teaching strategies for outcomes-based education*. Juta and Company Ltd.
- Korthagen, F., and A. Vasalos. (2005). Levels in Reflection: Core Reflection as a Means to Enhance Professional Growth. *Teachers and Teaching: Theory and Practice*, 11, 47-71. <https://doi.org/10.1080/1354060042000337093>
- Klempin, C., & Rehfeldt, D. (2020). Promoting and Measuring Reflective Skills in Depth and Breadth of English and Physics Teacher Trainees. *International Journal of Teaching and Learning in Higher Education*, 32(2), 225-239.
- Koszalka, T. A., H. D. Song, and B. Grabowski. (2002). *Examining Learning Environmental Design Issues for Prompting Reflective Thinking in Web-Enhanced PBL*. Paper Presented at the Annual Meeting of the American Educational Research Association, New Orleans, LO, April 1-5.
- Malik, M. A., Amjad, A. I., Aslam, S., & Fakhrou, A. (2024). Global insights: ChatGPT's influence on academic and research writing, creativity, and plagiarism policies. *Frontiers in Research Metrics and Analytics*, 9, 1-12. 1486832.
- Ojanen, S. (1993). *A Process in Which Personal Pedagogical Knowledge Is Created through the Teacher Education Experience*.
- Ong, D. J., Aslam, S., & Amjad, A. I. (2024). Interactive Tablets: Catalyzing Engaged Science Learning in English Instruction. *World Journal of English Language*, 14(5), 413-423. <https://doi.org/10.5430/wjel.v14n5p413>
- Pollard, V. (2008). Ethics and reflective practice: Continuing the conversation. *Reflective practice*, 9(4), 399-407. <https://doi.org/10.1080/14623940802431788>
- Posnanski, T. J. (2002). Professional development programs for elementary science teachers: An analysis of teacher self-efficacy beliefs and a professional development model. *Journal of Science Teacher Education*, 13(3), 189-220. <https://doi.org/10.1023/A:1016517100186>
- Schön, D. (1983). *The Reflective Practitioner*. New York: Basic Books.
- Schön, D. (1987). *Educating the Reflective Practitioner*. San Francisco: Jossey-Bass.
- Semerci, N., and H. H. Kılınç. (2010). Primary First and Second Stages Teachers' Reflective Thinking Tendencies (Case of Elazığ City). *Doğu Anadolu Bölgesi Araştırmaları*, 8(1), 1-14.
- Tang, C. (2002). *Reflective diaries as a means of facilitating and assessing reflection*. Quality conversations: Proceedings of the 29th HERDSA Annual Conference Perth.
- Valli, L. (1997). Listening to other voices: A description of teacher reflection in the United States. *Peabody journal of Education*, 72(1), 67-88. https://doi.org/10.1207/s15327930pje7201_4
- Zahid, M., & Khanam, A. (2019). Effect of Reflective Teaching Practices on the Performance of Prospective Teachers. *Turkish Online Journal of Educational Technology-TOJET*, 18(1), 32-43.
- Zeichner, K. M., & Liston, D. P. (2013). *Reflective teaching: An introduction*. Routledge. <https://doi.org/10.4324/9780203822289>